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Sawflies of the *Nematinus luteus* Group (Insecta: Hymenoptera: Tenthredinidae) from Japan

Ichiji Togashi

1-chome, Tsurugihonmachi, Hakusan-shi, Ishikawa Prefecture, 920–2121 Japan

Abstract Four new species of the sawfly genus *Nematinus*, *N. yatsugatakeanus*, *N. montanus*, *N. satoi*, and *N. hokkaidonis*, from Japan are described and illustrated. They all belong to the *N. luteus* group. A key is given for the females of the Japanese species of the *N. luteus* group.
Key words: Symphyta, Tenthredinidae, Nematinae, *Nematinus*, *luteus* group, Japan.

The genus *Nematinus* Rohwer is divided into two species-groups based on characters of the sawsheath (Togashi, 1991). One is the *N. luteus* group and the other is the *N. accuminatus* group. The sawsheath of the *N. luteus* group is more or less parallel sided and subtruncate at its apex in dorsal view (Figs. 25–30). The sawsheath of the *N. accuminatus* group sharply tapers to an acute apex in dorsal view (figs. 4, 8, 10 in Togashi, 1991).

Four species of the *Nematinus luteus* group have been recorded from Japan, *N. alni* (Rohwer, 1910), *N. matsumurai* (Vikberg, 1982) [=*N. dorsalis* (Matsumura, 1912)], *N. japonicus* (Marlatt, 1898), and *N. luteus* (Panzer, 1804) (Togashi, 1991). *Nematinus alni* and *N. japonicus* were described from males (Marlatt, 1898; Rohwer, 1910). Association of males with females is uncertain, and these species are not dealt with in this work.

Recently, I had an opportunity to examine 26 specimens of the *N. luteus* group collected in Hokkaido and in the central part of Honshu, Japan. As a result of this study, these were separated into six species including four new species. The four new species, *N. yatsugatakeanus*, *N. montanus*, *N. satoi*, and *N. hokkaidonis*, are very closely allied to *N. luteus*, but these species are separated from the latter by the form of the clypeus and fore inner tibial spur, and by the structure of the sawsheath and lancet. Here, I describe and illustrate the four new species.

The specimens used in this work are kept in the National Museum of Nature and Science, Tokyo (NSMT), and the National Museum of Natural History, Washington, D.C. (USNM).

Key to females of the Japanese species of *N. luteus* group

1. Abdominal tergites mostly black or black with fulvous lateral sides of 2nd to 8th tergites or 7th to 9th tergites fulvous; sawsheath as in Figs. 23 and 29. ..... *N. matsumurai*
— Abdominal tergites mostly fulvous or fulvous with 1st and 2nd tergites black. 2
2. Mesoscutum fulvous with triangular black macula on median lobe (Fig. 2); anterior 1/5 of 1st tergite black; clypeus as in Fig. 3; fore inner tibial spur as in Fig. 7; claw as in Fig. 13; sawsheath as in Figs. 19 and 25. ..... *N. yatsugatakeanus*
— Mesoscutum not as above; coloration of abdominal tergites various. 3
3. Metascutellum and 1st abdominal tergite fulvous. 4
— Metascutellum and 1st abdominal tergite black. 5
4. Hind tibia entirely fulvous; cercus long (Fig. 26); sawsheath as in Figs. 20 and 26. ..... *N. montanus*
— Apical portion of hind tibia black; cercus short (Fig. 30); sawsheath as in Figs. 24 and

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30. .....*N. luteus*

5. Head entirely fulvous; 2nd tergite dark brown; clypeus shallowly emarginate (Fig. 5); fore inner tibial spur as in Fig. 9; tarsal claw as in Fig. 15; sawsheath as in Figs. 21 and 27. .....*N. satoi*

— Head fulvous but ocellar basin, inner and hind orbits, and frontal area black (Fig. 1); 2nd tergite black; clypeus deeply emarginate (Fig. 6); fore inner tibial spur as in Fig. 10; claw as in Fig. 16; sawsheath, in lateral and dorsal views as in Figs. 22 and 28. ....*N. hokkaidonis*

Nematinus yatsugatakeanus sp. nov.

(Figs. 2, 3, 7, 13, 19, 25, 31, 36)

Female. Length 8 mm. Body fulvous with following parts black: triangular macula on median lobe of mesoscutum (Fig. 2), anterior 1/4 of mesosternum, anterior 1/5 of 1st tergite, and anterior 1/4 of 9th abdominal tergite. Antenna fulvous, but dorsal side of basal 3 segments dark brown. Wings hyaline; stigma except for dark brown marginal area, costa, and apical 2/3 of subcosta yellow; other veins dark brown to black. Legs fulvous.

Head: transverse interocellar, postocellar, and lateral furrows distinct; postocellar area transverse and slightly convex; OOL : POL : OCL = 1.1 : 1.0 : 1.3; frontal area slightly concave; median fovea distinct, elongate in form; lateral fovea distinct, punctiform; antenno-ocular distance nearly as long as distance between antennal sockets; supraclypeal area nearly flattened; clypeus emarginate (Fig. 3). Antenna nearly as long as costa+stigma of forewing; relative lengths of segments about 1.5 : 1.0 : 5.0 : 5.5 : 5.0 : 4.0 : 4.0 : 3.5 : 3.5; pedicel subquadrate.

Thorax: Mesoscutellum nearly flattened; breadth of cenchrus longer than distance between cenchri. Wings: petiole of anal cell of hindwing about twice as long as nervulus. Legs: fore inner tibial spur as in Fig. 7; hind basitarsus nearly as long as following 3 segments combined; claw as in Fig. 13.

Abdomen: Sawsheath, in lateral and dorsal views as in Figs. 19 and 25; cercus about twice as long as sawsheath (Fig. 25); lancet (Fig. 31) with 11 serrulae.

Punctation: Head and thorax covered with fine setigerous punctures, postocular area becoming closer than vertex. Abdominal tergites practically impunctate, shining.

Male. Unknown.

Food plant. Unknown.

Distribution. Japan (Honshu).

Holotype: ♀, 23–26. VII. 1996, Minoto, Mt. Yatsugatake, Nagano Pref., A. Shinohara leg. (NSMT).

Paratype: 1♀, same data as for holotype (NSMT).

Remarks. This new species very closely resembles *N. luteus* (Panzer, 1804) known from Europe and Japan, but it is distinguished from the latter by having a black triangular macula on the median lobe of the mesoscutum (entirely fulvous in *N. luteus*), by the long cercus about twice as long as the sawsheath (in *N. luteus*, only as long as the sawsheath, see Figs. 25 and 30), and by the shape of the sawsheath (see Figs. 19, 24, 25, and 30). From *N. montanus* sp. nov., it is distinguished by having the fulvous cervical sclerites (black in *N. montanus)* and by the structure of the sawsheath (see Figs. 19, 20, 25, and 26). From *N. satoi* sp. nov. and *N. hokkaidonis* sp. nov., it is separated by having a black triangular macula on the median lobe of the mesoscutum (entirely fulvous in these two species).

Nematinus montanus sp. nov.

(Figs. 4, 8, 14, 20, 26, 32, 37)

Female. Length 8 mm. Body fulvous with following parts black: median and lateral foveae, cervical sclerites, mesosternum, and anterior portion of 1st tergite. Antenna fulvous but dorsal side of basal 3 segments darker. Wings hyaline; stigma except for infuscate base, costa, and apical 2/3 of subcosta of forewing yellow; other veins dark brown to black. Legs fulvous.

Head: Postocellar area transverse and convex;

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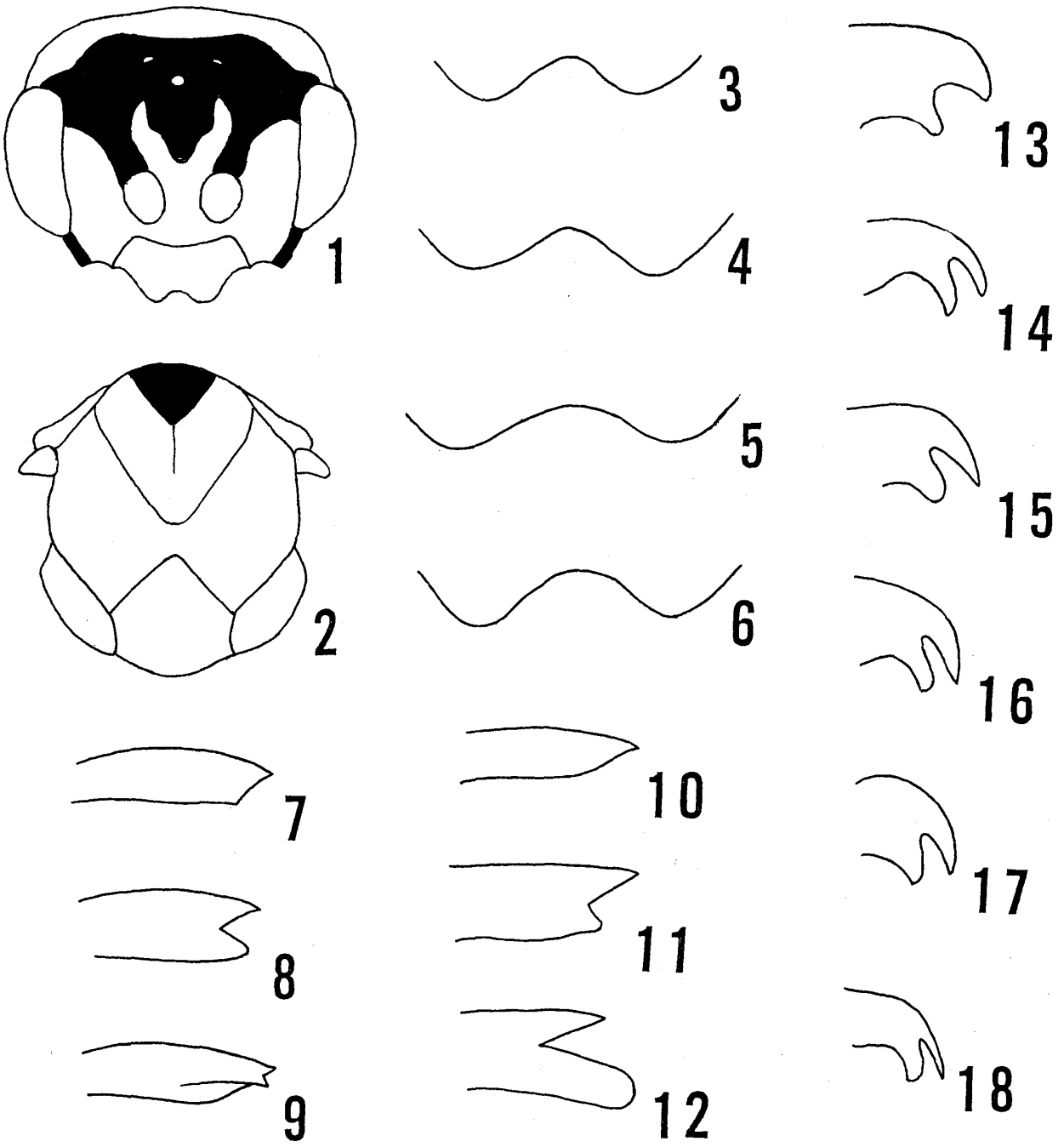

Figs. 1–18. *Nematinus* spp., head, frontal view (1), mesonotum, dorsal view (2), clypei, frontal view (3–6), fore inner tibial spurs, lateral view (7–12), and tarsal claws, lateral view (13–18). —1, 6, 10, 16, *N. hokkaidonis*; 2, 3, 7, 13, *N. yatsugatakeanus*; 4, 8, 14, *N. montanus*; 5, 9, 15, *N. satoi*; 11, 17, *N. matsumurai*; 12, 18, *N. luteus*.

interocellar and lateral furrows distinct; postocellar furrow ill-defined; OOL : POL : OCL = 1.3 : 1.0 : 1.4; frontal area concave, with distinct median longitudinal furrow; median fovea distinct, circular in outline; antenno-ocular distance as long as distance between antennal sockets; clypeus as in Fig. 4. Antenna slightly longer than costa+stigma of forewing, relative lengths of segments about 1.5 : 1.0 : 5.5 : 6.0 : 4.5 : 4.5 : 4.0 : 4.0 : 4.0; pedicel subquadrate.

Thorax: Mesoscutellum nearly flattened; breadth of cenchrus nearly as long as distance between cenchri. Wings: petiole of anal cell of hindwing nearly 0.7X as long as nervulus. Legs:

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fore inner tibial spur as in Fig. 8; hind basitarsus nearly as long as following 3 segments combined; claw as in Fig. 14.

Abdomen: Sawsheath, in lateral and dorsal views as in Figs. 20 and 26; cercus nearly twice as long as sawsheath (Fig. 26); lancet (Fig. 32) with 12 serrulae.

Punctation: Head and thorax covered with fine setigerous punctures; abdominal tergites nearly impunctate, shining.

Male. Unknown.

Food plant. Unknown.

Distribution. Japan (Honshu).

Holotype: ♀, 2. VIII. 1994, Mt. Hakusan (alt. 1500–1700 m), Ishikawa Pref., I. Togashi leg. (NSMT).

Paratypes: 1♀, 30. VII. 1990, Yarisawa, Nagano Pref., A. Shinohara leg. (NSMT); 1♀, 12. VII. 1996, Mt. Hakusan (alt. 1700–1900 m), Ishikawa Pref., I. Togashi leg. (NSMT); 1♀, 23–26. VII. 1996, Mt. Yatsugatake, Nagano Pref., A. Shinohara leg. (NSMT); 1♀, 12.VII. 1999, Mt. Hakusan (alt. 1700–1900 m), Ishikawa Pref., I. Togashi leg. (USNM); 1♀, 11.VII. 2000, Mt. Hakusan (alt. 1700–1900 m), Ishikawa Pref., I. Togashi leg. (USNM); 1♀, 20.VII. 1982, Mt. Sannomine, Fukui Pref., T. Tano leg. (NSMT).

Remarks. This new species very closely resembles *N. luteus* (Panzer, 1804) from Europe and Japan, but it is distinguished from the latter by the black cervical sclerites (fulvous in *N. luteus*), the entirely fulvous hind femur (in *N. luteus*, the apical portion is black), the long cercus twice longer than the sawsheath (in *N. luteus*, only slightly longer than the sawsheath, see Figs. 26 and 30), the shape of the sawsheath in lateral view (see Figs. 20 and 24), and by the 12 serrulae of the lancet (in *N. luteus*, the serrulae are 13, see fig. 582 in Benson, 1958). From *N. yatsugatakeanus* sp. nov., it is separable by the shape of the sawsheath (see Figs. 19, 20, 25, and 26) and by having the median lobe of the mesoscutum fulvous (in *N. yatsugatakeanus*, with a black triangular macula, see Fig. 2).

Nematinus satoi sp. nov.

(Figs. 5, 9, 15, 21, 27, 33, 38)

Female. Length 10 mm. Body fulvous with following parts dark brown to black: mesosternum, metascutellum, 1st tergite, central portion of 2nd tergite, anterior margin of 3rd and 4th tergites. Antenna fulvous, but dorsal side of basal 5 segments dark brown to black. Wings slightly yellowish hyaline; stigma except for infuscate base and costa of forewing yellow, other veins dark brown to black. Legs fulvous.

Head: Postocellar area rectangular and slightly convex; interocellar, postocellar, and lateral furrows distinct; OOL : POL : OCL = 1.2 : 1.0 : 1.3; frontal area concave, surrounding wall distinct; median fovea distinct, circular in outline; lateral fovea distinct; supraclypeal area convex; antenno-ocular distance longer than distance between antennal sockets; clypeus shallowly emarginate (Fig. 5). Antenna slightly shorter than costa+stigma of forewing; relative lengths of segments about 1.3 : 1.0 : 4.0 : 4.3 : 4.0 : 3.3 : 3.0 : 2.6 : 3.0; pedicel subquadrate.

Thorax: Mesoscutellum slightly convex; breadth of cenchrus nearly as long as distance between cenchri. Wings: petiole of anal cell of hindwing about twice as long as nervulus. Legs: fore inner tibial spur as in Fig. 9; hind basitarsus nearly as long as following 3 segments combined; claw as in Fig. 15.

Abdomen: Sawsheath, in lateral and dorsal views as in Figs. 21 and 27; cercus about twice as long as sawsheath (Fig. 27); lancet (Fig. 33) with 12 serrulae.

Punctation: Head and thorax covered with fine setigerous punctures; abdominal tergites practically impunctate.

Male. Unknown.

Food plant. Unknown.

Distribution. Japan (Hokkaido).

Holotype: ♀, 18. VI. 1938, Sounkyo, Sapporo, Hokkaido, K. Sato leg. (NSMT).

Paratype: 1♀, 14. VI. 1934, Nopporo, A. Yoshida leg. (NSMT); 1♀, 18. VI. 1936, Sounkyo, K. Sato leg. (NSMT); 1♀, 26. VI.

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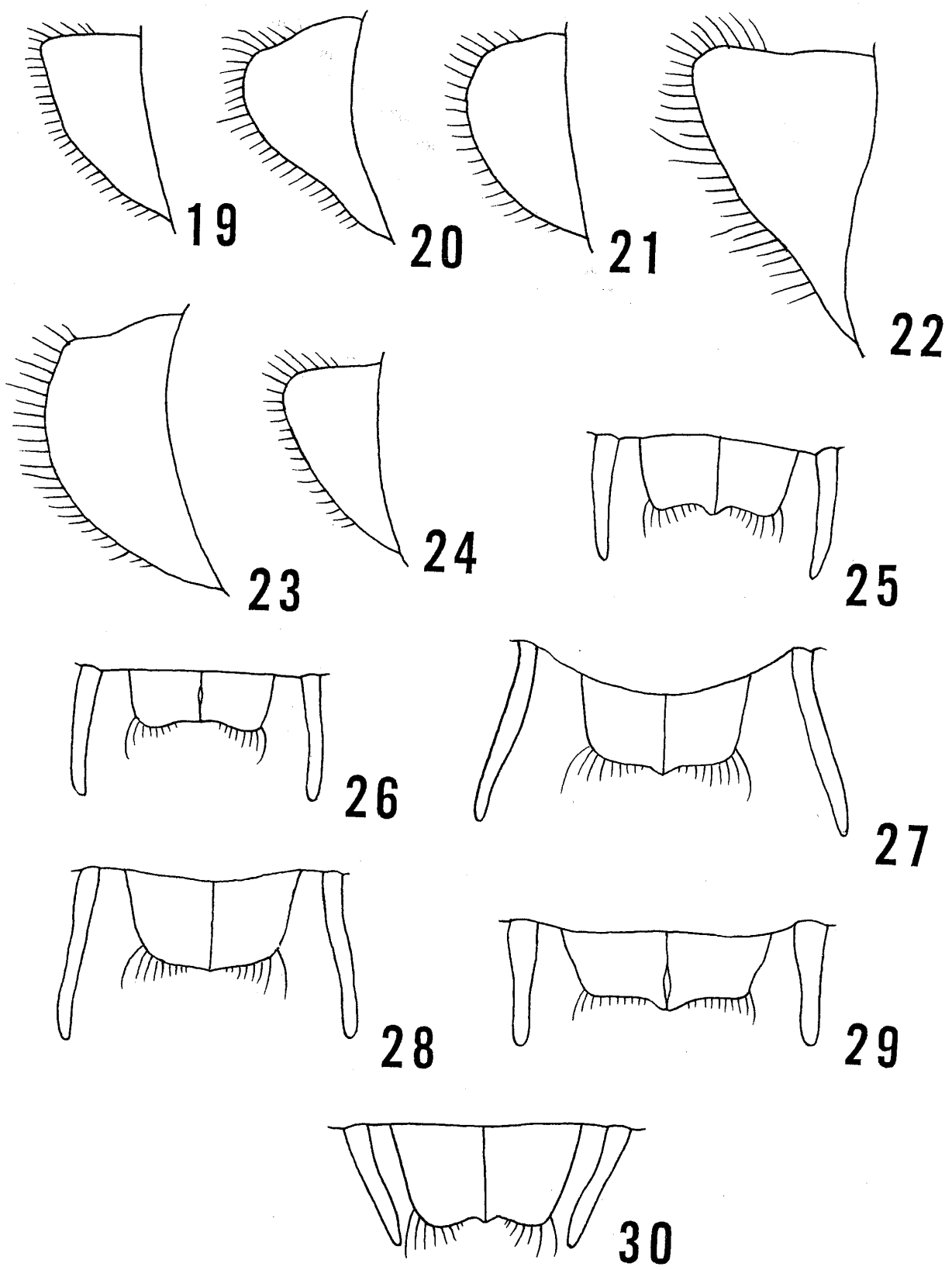

Figs. 19–30. *Nematinus* spp., sawsheaths, lateral view (19–24) and dorsal view (25–30). —19, 25, *N. yatsugatakeanus*; 20, 26, *N. montanus*; 21, 27, *N. satoi*; 22, 28, *N. hokkaidonis*; 23, 29, *N. matsumurai*; 24, 30, *N. luteus*.

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1991, Nakayama-toge, Shiribeshi, A. Shinohara leg. (USNM); 3♀, 13–15. VII. 1996, Nakayama-toge, Shiribeshi, A. Shinohara leg. (NSMT); 1♀, Yamada-onsen, Tokachi, H. Hara leg. (USNM)

Remarks. This new species is closely allied to *N. montanus* sp. nov., but it is distinguished from the latter by the black 1st and 2nd abdominal tergites (fulvous in *N. montanus*), the shape of the sawsheath (see Figs. 20, 21, 26, and 27), and by the shape of the lancet (see Figs. 32 and 33). From *N. luteus* (Panzer, 1804), it is separable by the dark brown 1st and 2nd abdominal tergites (fulvous in *N. luteus*), and by the long cercus exceeding the apex of the sawsheath (in *N. luteus*, about as long as the sawsheath, see Figs. 27 and 30). From *N. hokkaidonis* sp. nov., it is distinguished by the shallowly emarginate clypeus (deeply emarginate in *N. hokkaidonis*, see Figs. 5 and 6).

Nematinus hokkaidonis sp. nov.

(Figs. 1, 6, 10, 16, 22, 28, 34, 39)

Nematinus luteus: Togashi, 1998: 43 (misidentification)

Female. Length 8 mm. Head fulvous with following parts black: ocellar basin, anterior 1/3 to 1/2 of postocellar area, inner orbits, frontal area, surrounding area of tentorial pits, and malar space (Fig. 1). Thorax and abdomen fulvous with following parts black: inner side of cervical sclerites, mesosternum, metascutellum, metapostnotum, metepisternum, 1st and 2nd tergites, and 2nd and 3rd sternites. Antenna fulvous but dorsal side of basal 5 segments dark brown. Wings hyaline; stigma except for infuscate base, costa, apical 1/2 of subcosta of forewing, other veins dark brown to black. Legs fulvous.

Head: Postocellar area rectangular and slightly convex; circumocellar, interocellar, postocellar, and lateral furrows distinct; OOL : POL : OCL = 1.1 : 1.0 : 1.2; frontal area slightly concave; median fovea elongate and deep; lateral fovea distinct; antenno-ocular distance longer than distance between antennal sockets; supraclypeal area convex; clypeus deeply emarginate (Fig. 6). Antenna slightly shorter than costa+stigma of forewing, relative lengths of segments about 1.0 : 1.0 : 3.3 : 3.7 : 3.0 : 2.7 : 2.3 : 2.3 : 2.3; pedicel subquadrate.

Thorax: Mesoscutellum flattened; breadth of cenchrus nearly as long as distance between cenchri. Wings: petiole of anal cell of hindwing slightly longer than nervulus. Legs: fore inner tibial spur as in Fig. 10; hind basitarsus as long as following 3 segments combined; claw as in Fig. 16.

Abdomen: Sawsheath, in lateral and dorsal views as in Figs. 22 and 28; cercus about twice as long as sawsheath (Fig. 28); lancet (Fig. 34) with 12 serrulae.

Punctation: Head and thorax covered with fine setigerous punctures; abdominal tergites practically impunctate.

Male. Unknown.

Food plant. Unknown.

Distribution. Japan (Hokkaido).

Holotype: ♀, 28. VI. 1995, Nukabira-onsen, Tokachi, A. Shinohara leg. (NSMT).

Paratypes: 1♀, 14. VI. 1991, Shiraoi, Y. Nishijima leg. (NSMT); 2♀, 21–24. VI. 1993, Yamada-onsen, Tokachi, A. Shinohara leg. (NSMT); 1♀, 25. VI. 1993, Hidaka, A. Shinohara leg. (USNM); 1♀, 20. VI. 1994, Houheikyo, Sapporo, Y. Nishijima leg. (NSMT); 1♀, 7. VII. 1994, Horoshika-toge, Tokachi, A. Shinohara leg. (USNM).

Remarks. This new species is closely allied to *N. satoi* sp. nov., but it is distinguished from the latter by the deeply emarginate clypeus (in *N. satoi*, the front margin is shallowly emarginate, see Figs. 5 and 6), the shape of the sawsheath (see Figs. 21 22, 27, and 28), and by the shape of the lancet (see Figs. 33 and 34).

Nematinus matsumurai (Vikberg, 1982)

(Figs. 11, 17, 23, 29, 35, 40)

Specimens examined. 1♀, 18. VI. 1914, Nikko, Tochigi Pref., M. Yano leg. (NSMT); 1♀, 11. VII. 1937, Nikko, Tochigi Pref., G. Yamamoto leg. (NSMT).

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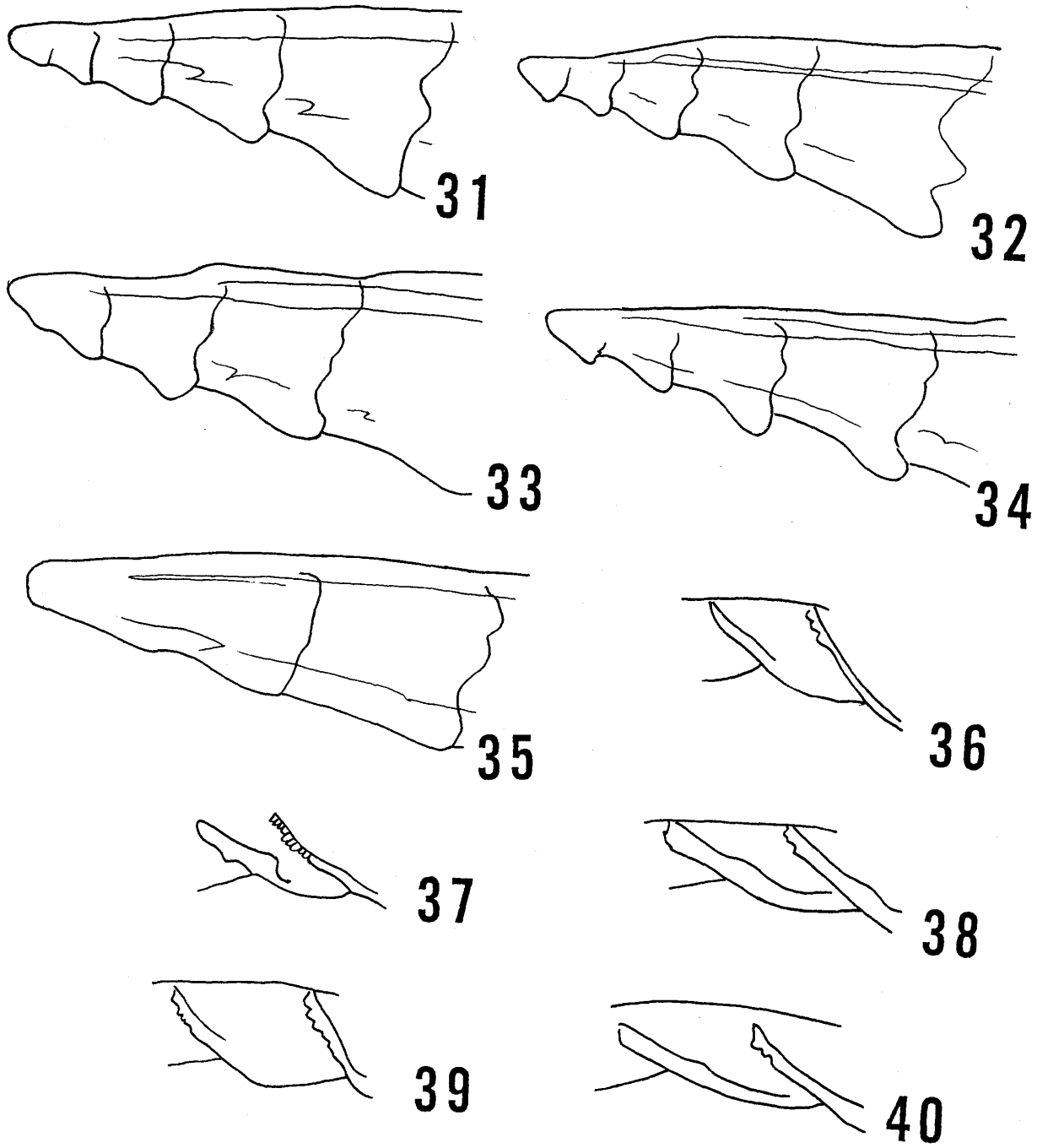

Figs. 31–40. *Nematinus* spp., apical portion of lancets (31–35) and basal two serrulae of lancets, (36–40). —31, 36, *N. yatsugatakeanus*; 32, 37, *N. montanus*; 33, 38, *N. satoi*; 34, 39, *N. hokkaidonis*; 35, 40, *N. matsumurae*.

Nematinus luteus (Panzer, 1804)

(Figs. 12, 18, 24, 30)

Specimen examined. 1♀, 30. VII. 1976, Renge Spa, Niigata Pref., K. Baba leg. (NSMT). This specimen is very similar to a European specimen of *N. luteus* identified by Dr. S. M. Blank.

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